EASTERN RESEARCH GROUP, INC.

MEMORANDUM

TO: Jim Eddinger, U.S. Environmental Protection Agency

FROM: Christy Burlew, Eastern Research Group, Inc.

DATE: October 8, 1998

SUBJECT: Final Minutes of March 24 and 25, 1998 Industrial Combustion Coordinated Rulemaking Boiler Source Work Group Meeting

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1.0 INTRODUCTION

- The meeting of the Boiler Source Work Group (BWG) of the Industrial Combustion Coordinated Rulemaking (ICCR) was held on March 24 and 25, 1998 in Alexandria, VA.
- A meeting agenda that outlines the topics of discussion is included as attachment 1.
- The objectives of the meeting were to:

    1. Present preliminary data analyses for Work Group comment
    2. Discuss Progress and Possible Recommendations on Boiler Phase I Test Plan
    3. Discuss Progress on Boiler HAPs of Interest

- A complete list of attendees and their affiliation is included as attachment 2.

2.0 SUMMARY OF DISCUSSION

Jim Eddinger opened the meeting. The meeting discussion generally followed the agenda. Topics of conversation are summarized in the following sections:

2.6 Discussion of Boiler Testing Program
2.7 Boiler Subgroup Reports

2.1 Discussion of Status of ICCR Databases

- Jim Eddinger circulated an e-mail message March 12 that outlined basic statistics for the ICCR inventory and survey databases.

- A Work Group member suggested that EPA periodically provide a bulletized list of the filenames of the most current versions of each of the ICCR databases.

- EPA's contractor is currently conducting a phone survey of those ICR respondents who indicated that they had HAP emissions data to determine if the test data would be useful to the ICCR process. Letters requesting this test data will be sent to these respondents and the emissions test database will be updated with this additional data.

2.2 Presentation and Discussion of Preliminary Data Analyses Packet

- EPA circulated a data packet for Work Group comments that presents some of the preliminary information and analyses for version 3.0 of the inventory database and version 2.0 of the ICR database. The data packet included information on preliminary Section 112/129 material designations, boiler subcategories, control technology assessment, preliminary MACT floor control levels, and model boilers. This packet is provided as attachment 3.

Preliminary Section 112/129 Designations

- Jim Eddinger reviewed the revised preliminary Section 112/129 material designations. Mr. Eddinger indicated that this revised list was mainly changed to designate some of the wood materials as Section 112 based on comments received at the last meeting.

- A Work Group member questioned the assignment of anthracite culm and bituminous gob to Section 112 materials. Another Work Group member indicated that the EPA definition of coal included coal refuse.

- A Work Group member pointed out that there would need to be consideration given to the difference between on-specification used oil and off-specification used oil when making future Section 112/129 determinations.

- An EPA representative pointed out that these are just preliminary material designations and there is currently no written rationale for these assignments. These assignments will not be final until the definition of non-hazardous solid waste is developed.

Boiler Subcategories

- A member of the Work Group indicated that table II-1 in the data packet was incomplete. The member indicated that the non-fossil subgroup had proposed several subcategories and these should be listed even if there were no boilers in the inventory that match the category definitions.

- A Work Group member pointed out that many of the ranges shown on the subcategory fact sheets for heat input and facility employee count were unreasonable. This data needs to be reviewed more closely to remove incorrect information.

- Boiler Work Group members recognized that the reason so few boilers could be assigned to the current subcategories is because of the issue of co-firing multiple fuels. The Work Group members discussed this specific issue at some length. A summary of this discussion is included in Section 2.3.

Control Technology Assessment

- A Work Group member pointed out that table III-1 in the data packet did not account for possible control device combinations. These combinations will also need to be evaluated and efficiencies of applicable control technologies need to be assessed.

- A Work Group member cautioned against assigning collection efficiencies to control devices without considering the material being burned because some controls are not applicable to all fuels. Work Group members suggested approaching the control ranking process on a subcategory or subgroup basis.

Preliminary MACT Floor Control Levels

- Work Group members pointed out that the control techniques and combinations of controls will need to be ranked for HAP removal efficiencies before MACT floors can be refined.

Model Boilers

- This analysis was discussed primarily within the boiler subgroups. Refer to Attachment 4 for summary of subgroup discussions.

2.3 Discussion of Co-Fired Boilers and Subcategories

- Work Group members discussed possibilities for how to assign co-fired boilers to appropriate subcategories. Several members indicated that the subcategories should accurately represent the existing data in the inventory. Three issues were identified: (1) many boilers fire predominantly fossil fuels with small percentages of non-fossil material, (2) many non-fossil boilers fire multiple non-fossil materials, and (3) many boilers switch fuels during the year.

- One Work Group member proposed that for Section 112 materials only, a boiler burning a fuel at >50% heat input on an annual basis should be classified in the subcategory with that material. Other Work Group members indicated that a 70% cutoff would be more appropriate to determine a majority fuel. Some members did not agree with using annual heat input as a basis because burning 100% of a non-fossil material 30% of the year is a concern from an emissions and a control standpoint.

- For multiple fuel boilers, the Work Group discussed whether the units should be assigned to the subcategory with the most stringent regulation. A Work Group member suggested that the Work Group could identify the worst fuel and if this is >30% of the heat input, the boiler would be assigned to this subcategory. Some members of the Work Group did not agree with this approach.

- Jim Eddinger of EPA indicated that the Industrial Boiler NSPS has standards for different fuels and then provides an equation to deal with boilers burning fuel mixtures. However, the boilers in the ICCR database need to be assigned to a subcategory.

- One of the issues identified is that there are many boilers in the inventory that burn a small percentage of non-fossil materials with primarily fossil fuels. Some members of the fossil fuel subgroup were not opposed to looking at these units within their subgroup. These members did express concern about the firing of non-fossil materials with natural gas because the emissions from these boilers would be characterized more by the non-fossil material being burned. The subgroup members also pointed out that boilers burning Section 129 materials should not be moved into the fossil subgroup.

- The Work Group was instructed to discuss this issue within the three subgroups and come to conclusions about how each subgroup would proceed. Results of the subgroup discussions are presented in Section 2.7 and requests for further data analyses to flesh out this co-firing issue are listed under Section 3.0 Action Items.

2.4 Presentation and Discussion of Economic Task Group Status

- Paul Tucker, a member of the economics task group, outlined the status of the task group and presented a flow diagram detailing how the different task groups will need to work together at key points in the process. The flow diagram is included as attachment 5.

- Mr. Tucker indicated that one of the roles of the economics task group was to obtain cost algorithms for control techniques being considered by the Boiler Work Group and to ensure that these algorithms were satisfactory. The economics task group will need input from the control technology task group on the list of controls to consider.

- A Work Group member suggested grouping a lot of the similar controls before doing any cost analysis because this would greatly reduce the work load.

- Mr. Tucker added that it is also important for future economics analyses that the subgroups develop model boilers that accurately represent most of the ICCR inventory of sources.

2.5 Presentation and Discussion of HAPs of Interest

- Members of the HAPs of interest task group circulated preliminary information concerning HAPs of interest. These materials are included as attachment 6. The members indicated that the task group expected to provide the testing task group with a list of HAPs of interest by the end of the week.

- Andy Bodnarik presented information on the HAP modeling he conducted. This revised modeling used more realistic input data for boilers. Several Work Group members agreed that this revised model was more representative of ICCR sources. The modeling information is included as attachment 7.

- Michael Hewett suggested that the HAPs of interest task group look at not only the New Hampshire thresholds but also compare the results with acceptable ambient levels (AALs) from other states so that the modeling is more representative. Mr. Hewett volunteered to provide Florida's list of AALs and to help contact other states.

- A Work Group member pointed out that it might be incorrect to include construction products and plywood with clean wood because there is no data to support this. As a result, construction debris will not be included in the category with dry wood.

- Decision: The Work Group decided to include wellhead gas in the definition of natural gas with the exception of mercury. The Work Group would like to test wellhead gas for mercury emissions.

- Decision: The Work Group decided to drop chlorinated compounds, POMs/PAHs, and all metals except for mercury and arsenic from the list of HAPs of interest for natural gas.

- Decision: The Work Group decided to drop xylenes, toluenes, phenols, and acetaldehyde from the HAPs of interest list for residual oil.

- Decision: The Work Group decided to drop xylenes from the list of HAPs of interest for coal. Mark Bryson volunteered to review the data in the inventory database to see if the assumption that all coal boilers have particulate control can be used as a baseline for emissions.

- The Work Group will leave all the pollutants on the list of HAPs of interest for wood. Andy Bodnarik will apply the new, realistic modeling to these boilers and the list will be revised based on these results.

2.6 Discussion of Boiler Testing Program

- Jim Eddinger, of EPA, gave a brief presentation on a possible boiler testing program. The overheads of this presentation are included as attachment 8.

- Mr. Eddinger indicated that there were several steps to developing a testing program. The first would be to identify data needs, such as control technology efficiency information. The Work Group would then begin to fill these data gaps with known data, similar data from the MWC or MWI rulemakings, or possibly through additional testing.

- Mr. Eddinger indicated that the objectives of the Work Group discussion on testing were to discuss whether all members would agree to go to the Coordinating Committee in April with a test proposal, to reach closure on what the focus of a boiler test plan would be, and discuss whether the Work Group will empower the testing task group to develop and present a Boiler Work Group test recommendation to the Coordinating Committee at the April meeting.

- The potential focus of the boiler test plan would include fuel analysis testing as a screening step to reduce the number of potential number of emission tests. The test plan might also include conducting a parametric test on a boiler with an applicable control device. Parametric testing would allow the Work Group to determine the effects of different conditions such as GCP, varying load, and NOx controls on HAP emissions.

- A Work Group member suggested that if the test plan would only focus on one boiler, it might be most beneficial to test a boiler burning multiple non-fossil fuels since there is not data on this configuration.

- A Work Group member suggested that the testing task group identify obvious data gaps first. These would be boilers or fuels for which there is no available data. The Work Group should avoid testing a fuel for which there are already multiple data points. Even if the data for a fuel is highly varied, one additional test will not provide any useful conclusions.

- Decision: The Work Group empowered the members of the testing task group to prepare the presentation to the Coordinating Committee on boiler testing recommendations. The Work Group members requested that the task group make an effort to circulate the test plan to the group for comment if time allowed.

2.7 Boiler Subgroup Reports

- Each of the subgroups presented their progress during their breakout sessions. A summary of these reports is below. Flash minutes from each of the subgroup meetings are included as attachment 4.

Fossil Fuel Subgroup

- The subgroup indicated that it was going to review the units that fire >50% of a fossil fuel with wood or Section 112 non-fossil materials.

- The subgroup indicated that it is currently reviewing the list of control devices to identify those which are not applicable to gas or liquid fossil fuels.

- The subgroup requested that EPA prepare an analysis of the fossil fuel inventory by controls and size ranges. The subgroup plans to review this information and use it to revise model plants and possibly develop graduated levels of GCP.

- A representative of the EPA Office of General Counsel pointed out that it is inappropriate to subcategorize by size because some boilers are controlled and some are not. If there are technical, engineering reasons for smaller boilers not being controlled, then a categorization by size is acceptable. If the reasons for smaller boilers not being controlled are purely economic, then a categorization by size is not acceptable. Cost effectiveness and economics are not considerations at the MACT floor level. These economic issues can be considered for controls above the MACT floor.

Wood Subgroup

- The subgroup indicated that it needed to further refine the wood model boilers and would request additional data analyses from EPA.

- The subgroup said that it could proceed with its work without adjusting the subcategory cutoffs to include non-fossil units in the wood subgroup. However, the subgroup requested that EPA review the database at different cutoff points regardless of subgroup to see where the inventory of boilers might fall.

Non-Fossil Fuel Subgroup

- The subgroup revised its subcategories based on new data analyses provided by EPA. The subgroup generally agrees with EPA's approach of categorizing first by solid, liquid or gas but feels that further refinement is necessary.

- The subgroup requested that EPA develop new data analyses based on the revised non-fossil subcategories. The subgroup will use these analyses to determine whether some of the boilers currently classified as non-fossil are more appropriately categorized in another subgroup.

3.0 ACTION ITEMS

- The HAPs of interest task group will provide the revised lists and the accompanying rationale to Jim Eddinger of EPA.

- EPA will revise the data analyses for non-fossil boilers based on the subgroups new subcategories. The analyses will include a review of a 90%, a 70%, a 50% and a 30% cutoff for majority fuels and these analyses should be available at the next Boiler Work Group meeting.

- EPA will provide the fossil fuel subgroup with a breakdown of fossil fuel boilers by control and size range.

- EPA will review the ICR database to identify those boilers that fire >50% of a fossil fuel with wood. This analysis should be available to the fossil fuel subgroup by the next meeting.

- EPA will review the data in the ICR database using several different cutoff percentages for majority fuels. The wood subgroup requested that this analysis be done without regard to fuel type so that the Work Group can identify the best way to subcategorize.

- EPA will take a first cut at ranking control technologies and provide this to the Work Group for comment.

- The members of the testing task group will set up a conference call to discuss the details of the presentation to the Coordinating Committee at the April meeting.

4.0 NEXT MEETING

- The next meeting of the Boiler Work Group will be April 30 in Fort Collins, CO and will be held in conjunction with the Coordinating Committee meeting. Agenda items will include:

    - Feedback from the Coordinating Committee on Boiler Test Plan and Other Issues
    - Subcategories and Co-Fired Boilers

- Additional agenda topics should be forwarded to Jim Eddinger.

These minutes represent an accurate description of matters discussed and conclusions reached and include a copy of all reports received, issued, or approved at the March 24 and 25, 1998 meeting of the Boiler Work Group." Jim Eddinger, EPA Co-Chair.

BOILER WORK GROUP MEETING

March 24 and 25, 1998
Washington D.C.

DISCUSSION & DECISIONS

- Jim Eddinger of EPA and EPA's contractor presented a revised data analyses packet. The packet provided information on a revised draft Section 129/112 list, control levels for subcategories, subcategory fact sheets, and model boilers.

- The Work Group discussed how to deal with units assigned to the wood subgroup that fire a majority of fossil fuel and boilers assigned to the non-fossil subgroup that fire a majority of fossil fuel or wood. Members of the Work Group decided to allow subgroups to decide whether these units are more appropriate in other subgroups. The outcome of the subgroup meetings were that the non-fossil subgroup decided to analyze data more and may make a recommendation at the next meeting on what to do with these units. The fossil and wood subgroups decided that if a boiler fires both wood and fossil fuels that are all classified as Section 112 materials, the boiler would be assigned to the subgroup that has the majority material (i.e., greater than 50%).

- Paul Tucker updated the WG on the status of the economics task group. Mr. Tucker indicated that the task group would request help from the control technologies subgroup in prioritizing controls. Mr. Tucker also discussed the schedule for completing work.

- Wendell Brough and Andy Bodnarik provided an update on the HAP's of interest task group. The task group plans to provide a list of pollutants for clean wood, coal, gas, and fuel oil to EPA for distribution on the week of April 6.

- Jim Eddinger reviewed the status of the testing task group. Mr. Eddinger listed three recommendations the task group had for the Work Group: (1) Reach agreement to present an initial (phase I) test plant to the Coordinating Committee at the April meeting, (2) Agree on the focus of the test plan, and (3) Empower the task group to make recommendations to the Coordinating Committee. The Work Group accepted all three recommendations and empowered the task group to speak for the entire Work Group.

- The Work Group discussed subcategorizing boilers by size. Many members raised a concern about applying controls to smaller units in a subcategory. EPA staff emphasized that there needed to be a technical reason for subcatorizing by size or any other way.

- The Work Group concurred that the Boiler Work Group presentation at the Coordinating Committee should focus on a testing plan and a final list of HAPs of interest.

ACTION ITEMS

- EPA will provide a list of control techniques for each subcategory for the next meeting.

- EPA will revise the data analyses packet based on decisions made in the subgroups, and complete the analyses of the emissions database and the model plants for non-fossil boilers.

- Work Group members will complete the subcategory fact sheets for the next meeting.

- The HAPs of interest task group will provide a list of pollutants for clean wood, coal, gas, and fuel oil the week of April 6 to EPA. EPA will then distribute the list to members.

- Members requested EPA to E-mail members revised telephone numbers and E-mail addresses of the members of the Work Group.

- Members requested that EPA rank the effectiveness of control techniques on reducing emissions in subcategories rather than the subgroups in order that the results be consistent between subgroups.

NEXT MEETING

- The next meeting will be April 30 in Fort Collins, Colorado in conjunction with the Coordinating Committee meeting.

- Future meetings planned are June 9 and 10 in Boston, July 30 in California, and September 24 in RTP, NC.

FOSSIL FUEL SUBGROUP MEETING
(March 24 and 25, 1998)

ATTENDEES

John deRuyter	Christy P. Burlew	Jim Jordan	Virendra Trivedi
Bill Freeman	Ruth Mead	Gerald Doddington	Stanley Carter
Alex Johnson	Wendell Brough	Gunseli Shareef	Mark Bryson
Edwin Weaver			

DISCUSSION & DECISIONS

- A member of the wood subgroup made a proposal to the fossil fuel subgroup based on a consensus decision reached by the wood subgroup. The member proposed that those co-fired boilers in the survey database that burn only materials currently assigned to Section 112 be distributed between the three subgroups as follows: (1) for units burning two categories of fuel (category meaning non-fossil, fossil or wood), the majority fuel (>50%) will determine which subgroup will handle this unit, (2) for units burning a combination of all three fuel categories and there is no category of fuel fired at >50%, the fuel that represents 34% of the heat input will determine which subgroup will handle this unit.

- The fossil fuel subgroup discussed the wood subgroup recommendation and decided that it would initially accept the recommendation from the wood subgroup. The fossil fuel subgroup reserved the right to move units back into the Wood Subgroup for consideration if those units were firing >50% gas or fuel oil with a wood or if the fossil fuel subgroup did not have the appropriate information or expertise to be able to consider certain boilers.

- John deRuyter circulated tables that identified those control devices that are applicable to some of the fossil fuel subcategories. Mr. deRuyter also gave them a preliminary ranking in regard to HAP control efficiency.

- The subgroup discussed how gas-only boilers will be handled. The subgroup will have to decide whether to employ good combustion practices as a compliance alternative if there is no numerical emission limit set for gas units.

- The subgroup briefly discussed the subcategory fact sheets that were presented by EPA and ERG and determined that some of the capacity ranges from the database are unreasonable. The size range information provided in the control technique summary tables will help the subgroup to identify these outliers.

- The subgroup created a new subcategory for subbituminous coal stokers. Using the current hierarchy to assign boilers to subcategories, a boiler burning bituminous and subbituminous coal would be classified as a subbituminous coal boiler. These stokers classified as subbituminous coal did not fit into any other fossil fuel subcategory.

- Bill Freeman of API indicated that there is an error in the ICCR Inventory V3.0 database. He said there are several boilers in the inventory database located in California that are incorrectly listed as burning crude oil.

- For the purposes of summarizing the available test information, coal has not been broken into subcategories and all coal boilers are assumed to have particulate control. A subgroup member is reviewing the available test information to determine the baseline emissions for coal boilers. The coal emissions in the database cover a wide range probably due to varying levels of controls.

- One subgroup member raised a concern about radio nuclides found in coal. Another subgroup member pointed out that there was a proposed rule on radio nuclides 4-5 years ago that might provide additional testing information.

- The subgroup briefly discussed the current model boilers for fossil fuels. The breakdown of controls by size will help determine if the current model boilers adequately represent the boiler population and then any necessary modifications can be made.

- The subgroup discussed the economics task group and agreed that the economics task group needs to begin thinking of how to develop a cost algorithm for good combustion practices. One member pointed out that the group needs to be aware of the scope of applying good combustion practices and that different techniques are applicable to different size boilers.

- The subgroup discussed the possibility of establishing a lower size cut-off. The group discussed the following concepts for lower size cut-offs used in the proposed Oil and Gas MACT: total HAP emissions rates on a per unit basis, the location of a unit (urban or rural area), and design heat input rate. The subgroup agreed to keep these concepts in mind as possible alternatives.

- The subgroup decided to recommend to the testing task group that if any fossil fuels were tested for HAPs that criteria pollutants should also be tested.

ACTION ITEMS

- The subgroup requested that EPA review the ICCR Survey database and extract those units that burn a majority of fossil fuel with other Section 112 materials and provide these as a separate data set.

- A subgroup member requested that EPA do an analysis on the number of sources burning the various fuel combinations in the database and provide this information to the economics task group.

- A subgroup member requested that EPA to provide the control device information for each subcategory divided by the following size categories: <10MMBtu/hr, 10-50MMBtu/hr, 50-100MMBtu/hr, 100-250MMBtu/hr, 250-500MMBtu/hr, 500-

750MMBtu/hr, and >750MMBtu/hr. Another subgroup member requested that EPA also provide the number of employees per facility to these summary tables.

- Bill Freeman of API will provide the correction information for the inventory database to Jim Eddinger and request that this change be made to the inventory database.

- The subgroup requested that EPA review the emissions database to extract control information from the "note" fields.

- One subgroup member requested that EPA provide any available information on the applicability of the utility HAP data and other data being used for decision making in the process.

- The subgroup requested that EPA provide any information it has regarding radio nuclides in coal.

- John deRuyter plans to develop a preliminary proposal for the MACT floor for gas-fired units by the next Boiler Work Group meeting.

NON-FOSSIL FUEL SUBGROUP MEETING
(March 24 and 25, 1998)

ATTENDEES

Roy Oommen	Todd Barker	Mike Blumenthal	Andrew Bodnarik
David Cooper	Gordon Gaetke	Michael Hewett	Jim Eddinger
David Marrack	Jeffrey Roop	Jim Stumbar	
Paul Tucker			

DISCUSSIONS AND DECISIONS

- EPA and EPA's contractor made a presentation on one possible way to subcategorize non-fossil boilers. The subcategorization was based on separating materials by solid, liquid, and gas, and then grouping similar types of materials together. The members of the subgroup generally agreed on including some solid, liquid, and gas subcategories, but did not agree with the materials that were grouped together.

- David Cooper, Jeff Roop, and Jim Stumbar revised the existing subcategories. The subgroup concurred with the revisions. The following are the new subcategories developed for non-fossil boilers:

  1. >70% Bagasse
  2. >70% Low Btu gas (including blast furnace gas)
  3. >70% High Btu gas (including coke oven gas, digester gas, landfill gas)
  4. >70% MSW and/or RDF
  5. >70% Waste oil (on spec oil)
  6. >70% Biomass
  7. >70% Tire derived fuel
  8. >70% Fossil fuel solids with non-fossil materials-stokers
  9. >70% Fossil fuel solids with non-fossil materials-pulverized
  10. >70% Fossil fuel solids with non-fossil materials-other
  11. Fossil fuel gas and other gas
  12. >70% fossil fuel liquid and other
  13. >70% Section 112 wood and other
  14. Mixed feed boilers that are Section 112 (no fuel above 70%)
  15. Mixed feed boilers that are Section 129 (no fuel above 70%)

- Members of the subgroup discussed the wood subgroup suggestion on moving co-fired boilers to other subgroups based on percent of material fired. However, members were uncomfortable with this suggestion and decided to keep all boilers burning non-fossil materials in the non-fossil subgroup. The members indicated that after further analyses was done, it may be decided to move some boilers firing small amounts of non-fossil fuel classified as Section 112 material to other subgroups.

- The subgroup discussed the testing recommendations presentation given by Jim Eddinger. Members noted that determining moisture and chlorine levels should be considered during phase I fuel analyses.

- One member suggested that EPA request existing fuel analysis information from members of the Work Group in order to save on costs.

- One member noted that the sugarcane industry was already conducting tests, and results will be made available to the Work Group. The member also noted that prior testing for mercury at boilers burning bagasse indicated very low levels were emitted.

ACTION ITEMS

- The subgroup requested that EPA revise the level of control analyses using the new subcategories. Members also requested that EPA show results assuming material cuts of >90%, >50%, and >30% as well as the >70%.

NEXT MEETING

- The next subgroup meeting will be on April 30 in Fort Collins, Colorado in conjunction with the Boiler WG meeting.

WOOD SUBGROUP MEETING
(March 24 and 25, 1998)

ATTENDEES

Rich Anderson (2nd day)	Andy Counts	Frank Ferraro	Greg Gesell
Brian Holmes	Rob Kaufmann	Kerry Kelly	Chad Leatherwood
Bob Palzer	Mike Soots	Dick Titus (2nd day)	Vladimir Zaytsef

DISCUSSIONS AND DECISIONS

- The subgroup recommended that testing be conducted on boilers that currently burn multiple fuels and that these tests be performed at "normal" boiler operation instead of developing a parametric test matrix based on unusual operating conditions.

- The subgroup decided that testing should include fuel analyses and is best performed at a pulp and paper facility since most of these plants fire multiple fuels.

- Rob Kaufmann volunteered to ask the American Forest and Paper Association members to allow testing at their plants after the subgroup identifies testing needs. He stipulated that members not be asked to operate their boilers under non-standard conditions.

- The subgroup recommended to the fossil and non-fossil subgroups the following cutoffs for co-fired wood boilers:
  - If a boiler is firing >50% wood and fuel from one other subgroup, the boiler is considered a wood-fired unit.
  - If a boiler is firing >34% wood and fuel from two other subgroups, the boiler is considered a wood-fired unit.

  This will keep most current wood boilers in the wood subgroup since only a small percentage of wood boilers fire <50% wood.

- Frank Ferraro provided an update of the Section 112/129 wood classification flow chart that Wendell Brough had presented in the full Work Group meeting.

- The subgroup reviewed model plants and decided to combine dutch ovens with stoker-fired boilers.

ACTION ITEMS

- The subgroup requested that EPA re-analyze the model plants with the 50% and 34% cuts to see how the "other" model plant category is affected. Dutch ovens should also be combined with stokers in this re-analysis.

- Frank Ferraro will update the HAPs of Interest list based on the revised New Hampshire model and E-mail it to the other wood subgroup members.

NEXT MEETING

- The subgroup will hold a conference call after the EPA's model plant re-analysis to determine how to classify the remaining "other" boilers. A date and time have not yet been set.

- The next subgroup meeting will be on April 30 in Fort Collins, Colorado, in conjunction with the Boiler WG meeting.

ATTACHMENT

Full Work Group Attendance List

Rich Anderson	Todd Barker
Michael Blumenthal	Andrew Bodnarik
Wendell Brough	Mark Bryson
Stanley Carter	David Cooper
Andy Counts	John deRuyter
Jon Devine	Gerald Doddington
Jim Eddinger	Frank Ferraro
Mike Fisher	Bill Freeman
Gordon Gaetke	Greg Gesell
Michael Hewett	Brian Holmes
Alex Johnson	Mark Kataoka
Robert Kaufmann	Kerry Kelly
Chad Leatherwood	David Marrack
Ruth Mead	Roy Oommen
Bob Palzer	Christy Presson
Steve Phelps	Jeffrey Roop
Gunseli Shareef	Mike Soots
James Stumbar	Virenda Trivedi
Paul Tucker	Edwin Weaver
Vladimir Zaytseff	

Attachment 1

Draft Meeting Agenda

INDUSTRIAL COMBUSTION COORDINATED RULEMAKING
BOILER WORKGROUP
DRAFT AGENDA
MARCH 24-25, 1998

Holiday Inn Hotel & Suites,
625 First Street, Alexandria, Virginia
(703) 548-6300

Major Meeting Objectives

- **Further refine subcategories and model plants.**
- **Agree on elements of Boiler Workgroup presentation to the Coordinating Committee regarding initial testing plan/program.**

Documents Posted to the TTN for this Meeting

Please see the Pre-meeting Review Documents area for the Boiler Workgroup on the TTN (http://www.epa.gov/ttn/iccr/bdir4.html).

Tuesday, March 24

8:30 am **Review agenda, major meeting objectives, and Boiler Workgroup milestones.**

8:45 am **Statistics on ICCR Databases**

9:15 am **Subcategory Templates**
- **EPA will provide partially filled in subcategory templates (modeled after the Incinerator Workgroup's subcategory templates).**
- **Workgroup questions. These templates should be discussed and more fully developed during the Subgroup meetings.**

9:45 am **Control Techniques**
- **EPA will provide a list of control techniques for consideration and discussion by the Subgroups.**

10:00 am **Break**

10:15 am **Economic Task Group Status Report**

10:45 am **MACT Floor**
- **EPA will present information in revised tables, which will be used for establishing the MACT floor, about subcategories, preliminary classification of materials as either 112 or 129, and model plants.**
- **Workgroup questions and discussion. Detailed discussion of information presented should occur in Subgroup meetings.**

11:30 am **Lunch**

12:45 pm **Status of Majority and Minority HAPs of Interest Reports**

1:15 pm **Testing Task Group Status Report and Preparation for April Coordinating Committee (CC) Meeting**

- **Testing Task Group status report.**
- **Workgroup discussion of testing issues.**
- **Preparation for April CC Meeting presentation-- Agree on elements of Boiler Workgroup presentation to the CC regarding initial testing plan/program.**

3:00 pm **Subgroup Meetings**

- **Possible Subgroup topics include: data gaps and testing needs; subcategory refinement; subcategory templates; model plant refinement; good combustion practice & pollution prevention.**

5:00 pm **Adjourn Subgroup Meetings**

<u>Wednesday, March 25</u>

8:00 am **Convene Subgroup Meetings**

9:30 am **Adjourn Subgroup Meetings**

9:45 am **Reconvene Workgroup-- Presentation from Michael Blumenthal Regarding Emissions from Scrap Tire Combustion**

10:15 am **Subgroup Reports**

10:45 am **Next Steps**

- **Final Workgroup preparation for April CC Meeting**
- **Identify April agenda topics**
- **Review major meeting objectives**
- **Review flash minutes**

12:30 pm **Adjourn**

Attachment 2

Full Work Group Attendance List

Attachment 2

Full Work Group Attendance List

Rich Anderson, Wheelabrator Technologies, Inc.
Todd Barker, The Keystone Center
Michael Blumenthal, Scrap Tire Management Council
Andrew Bodnarik, New Hampshire Department of Environmental Services
Wendell Brough, Hoechst Celanese Chemical Group
Mark Bryson, Aluminum Company of America
Stanley Carter, Drexel Heritage Furnishings, Inc.
David Cooper, University of Central Florida
Andy Counts, American Furniture Manufacturers Association
John deRuyter, E.I. du Pont de Nemours & Co., Inc.
Jon Devine, U. S. Environmental Protection Agency
Gerald Doddington, Air Force Civil Engineer Support Agency
Jim Eddinger, U. S. Environmental Protection Agency
Frank Ferraro, Wheelabrator Technologies, Inc.
Michael Fisher, American Plastics Council
Bill Freeman, Shell E&P Bellaire Technology Center
Gordon Gaetke, Union Carbide Corporation
Greg Gesell, American Ref-Fuel Company
Michael Hewett, Florida Department of Environmental Protection
Brian Holmes, Eastern Research Group
Alex Johnson, Citizens Commission for Clean Air in the Lake Michigan Basin
Mark Kataoka, U. S. Environmental Protection Agency
Robert Kaufmann, American Forest and Paper Association
Kerry Kelly, Tenneco
Chad Leatherwood, Eastern Research Group
David Marrack, Fort Bend Medical Clinic
Tom McGrath, Energy and Environmental Research Corporation

Full Work Group Attendance List (Continued)

Ruth Mead, Eastern Research Group
Roy Oommen, Eastern Research Group
Bob Palzer, Oregon Chapter of the Sierra Club
Steve Phelps, Thomasville Furniture Industries
Christy Presson Burlew, Eastern Research Group
Jeffrey Roop, Eastman Chemical Company
Gunseli Shareef, Radian International, LLC
Mike Soots, Kincaid Furniture Company, Inc.
James Stumbar, Foster Wheeler Environmental Corporation
Virendra Trivedi, Pennsylvania Department of Environmental Protection
Paul Tucker, International Paper
Edwin Weaver, Belco Technologies Corporation
Vladimir Zaytseff, North Carolina Department of Environment & Natural Resources

Attachment 3

Data Analyses Packet

(Available only in hardcopy)

Attachment 4

Work Group and Subgroup Meeting Flash Minutes

BOILER WORK GROUP MEETING

March 24 and 25, 1998
Washington D.C.

DISCUSSION & DECISIONS

- Jim Eddinger of EPA and EPA's contractor presented a revised data analyses packet. The packet provided information on a revised draft Section 129/112 list, control levels for subcategories, subcategory fact sheets, and model boilers.

- The Work Group discussed how to deal with units assigned to the wood subgroup that fire a majority of fossil fuel and boilers assigned to the non-fossil subgroup that fire a majority of fossil fuel or wood. Members of the Work Group decided to allow subgroups to decide whether these units are more appropriate in other subgroups. The outcome of the subgroup meetings were that the non-fossil subgroup decided to analyze data more and may make a recommendation at the next meeting on what to do with these units. The fossil and wood subgroups decided that if a boiler fires both wood and fossil fuels that are all classified as Section 112 materials, the boiler would be assigned to the subgroup that has the majority material (i.e., greater than 50%).

- Paul Tucker updated the WG on the status of the economics task group. Mr. Tucker indicated that the task group would request help from the control technologies subgroup in prioritizing controls. Mr. Tucker also discussed the schedule for completing work.

- Wendell Brough and Andy Bodnarik provided an update on the HAP's of interest task group. The task group plans to provide a list of pollutants for clean wood, coal, gas, and fuel oil to EPA for distribution on the week of April 6.

- Jim Eddinger reviewed the status of the testing task group. Mr. Eddinger listed three recommendations the task group had for the Work Group: (1) Reach agreement to present an initial (phase I) test plant to the Coordinating Committee at the April meeting, (2) Agree on the focus of the test plan, and (3) Empower the task group to make recommendations to the Coordinating Committee. The Work Group accepted all three recommendations and empowered the task group to speak for the entire Work Group.

- The Work Group discussed subcategorizing boilers by size. Many members raised a concern about applying controls to smaller units in a subcategory. EPA staff emphasized that there needed to be a technical reason for subcatorizing by size or any other way.

- The Work Group concurred that the Boiler Work Group presentation at the Coordinating Committee should focus on a testing plan and a final list of HAPs of interest.

ACTION ITEMS

- EPA will provide a list of control techniques for each subcategory for the next meeting.

- EPA will revise the data analyses packet based on decisions made in the subgroups, and complete the analyses of the emissions database and the model plants for non-fossil boilers.

- Work Group members will complete the subcategory fact sheets for the next meeting.

- The HAPs of interest task group will provide a list of pollutants for clean wood, coal, gas, and fuel oil the week of April 6 to EPA. EPA will then distribute the list to members.

- Members requested EPA to E-mail members revised telephone numbers and E-mail addresses of the members of the Work Group.

- Members requested that EPA rank the effectiveness of control techniques on reducing emissions in subcategories rather than the subgroups in order that the results be consistent between subgroups.

NEXT MEETING

- The next meeting will be April 30 in Fort Collins, Colorado in conjunction with the Coordinating Committee meeting.

- Future meetings planned are June 9 and 10 in Boston, July 30 in California, and September 24 in RTP, NC.

FOSSIL FUEL SUBGROUP MEETING
(March 24 and 25, 1998)

ATTENDEES

John deRuyter	Christy P. Burlew	Jim Jordan	Virendra Trivedi
Bill Freeman	Ruth Mead	Gerald Doddington	Stanley Carter
Alex Johnson	Wendell Brough	Gunseli Shareef	Mark Bryson
Edwin Weaver			

DISCUSSION & DECISIONS

- A member of the wood subgroup made a proposal to the fossil fuel subgroup based on a consensus decision reached by the wood subgroup. The member proposed that those co-fired boilers in the survey database that burn only materials currently assigned to Section 112 be distributed between the three subgroups as follows: (1) for units burning two categories of fuel (category meaning non-fossil, fossil or wood), the majority fuel (>50%) will determine which subgroup will handle this unit, (2) for units burning a combination of all three fuel categories and there is no category of fuel fired at >50%, the fuel that represents 34% of the heat input will determine which subgroup will handle this unit.

- The fossil fuel subgroup discussed the wood subgroup recommendation and decided that it would initially accept the recommendation from the wood subgroup. The fossil fuel subgroup reserved the right to move units back into the Wood Subgroup for consideration if those units were firing >50% gas or fuel oil with a wood or if the fossil fuel subgroup did not have the appropriate information or expertise to be able to consider certain boilers.

- John deRuyter circulated tables that identified those control devices that are applicable to some of the fossil fuel subcategories. Mr. deRuyter also gave them a preliminary ranking in regard to HAP control efficiency.

- The subgroup discussed how gas-only boilers will be handled. The subgroup will have to decide whether to employ good combustion practices as a compliance alternative if there is no numerical emission limit set for gas units.

- The subgroup briefly discussed the subcategory fact sheets that were presented by EPA and ERG and determined that some of the capacity ranges from the database are unreasonable. The size range information provided in the control technique summary tables will help the subgroup to identify these outliers.

- The subgroup created a new subcategory for subbituminous coal stokers. Using the current hierarchy to assign boilers to subcategories, a boiler burning bituminous and subbituminous coal would be classified as a subbituminous coal boiler. These stokers classified as subbituminous coal did not fit into any other fossil fuel subcategory.

- Bill Freeman of API indicated that there is an error in the ICCR Inventory V3.0 database. He said there are several boilers in the inventory database located in California that are incorrectly listed as burning crude oil.

- For the purposes of summarizing the available test information, coal has not been broken into subcategories and all coal boilers are assumed to have particulate control. A subgroup member is reviewing the available test information to determine the baseline emissions for coal boilers. The coal emissions in the database cover a wide range probably due to varying levels of controls.

- One subgroup member raised a concern about radio nuclides found in coal. Another subgroup member pointed out that there was a proposed rule on radio nuclides 4-5 years ago that might provide additional testing information.

- The subgroup briefly discussed the current model boilers for fossil fuels. The breakdown of controls by size will help determine if the current model boilers adequately represent the boiler population and then any necessary modifications can be made.

- The subgroup discussed the economics task group and agreed that the economics task group needs to begin thinking of how to develop a cost algorithm for good combustion practices. One member pointed out that the group needs to be aware of the scope of applying good combustion practices and that different techniques are applicable to different size boilers.

- The subgroup discussed the possibility of establishing a lower size cut-off. The group discussed the following concepts for lower size cut-offs used in the proposed Oil and Gas MACT: total HAP emissions rates on a per unit basis, the location of a unit (urban or rural area), and design heat input rate. The subgroup agreed to keep these concepts in mind as possible alternatives.

- The subgroup decided to recommend to the testing task group that if any fossil fuels were tested for HAPs that criteria pollutants should also be tested.

ACTION ITEMS

- The subgroup requested that EPA review the ICCR Survey database and extract those units that burn a majority of fossil fuel with other Section 112 materials and provide these as a separate data set.

- A subgroup member requested that EPA do an analysis on the number of sources burning the various fuel combinations in the database and provide this information to the economics task group.

- A subgroup member requested that EPA to provide the control device information for each subcategory divided by the following size categories: <10MMBtu/hr, 10-50MMBtu/hr, 50-100MMBtu/hr, 100-250MMBtu/hr, 250-500MMBtu/hr, 500-

750MMBtu/hr, and >750MMBtu/hr. Another subgroup member requested that EPA also provide the number of employees per facility to these summary tables.

- Bill Freeman of API will provide the correction information for the inventory database to Jim Eddinger and request that this change be made to the inventory database.

- The subgroup requested that EPA review the emissions database to extract control information from the "note" fields.

- One subgroup member requested that EPA provide any available information on the applicability of the utility HAP data and other data being used for decision making in the process.

- The subgroup requested that EPA provide any information it has regarding radio nuclides in coal.

- John deRuyter plans to develop a preliminary proposal for the MACT floor for gas-fired units by the next Boiler Work Group meeting.

NON-FOSSIL FUEL SUBGROUP MEETING
(March 24 and 25, 1998)

ATTENDEES

Roy Oommen	Todd Barker	Mike Blumenthal	Andrew Bodnarik
David Cooper	Gordon Gaetke	Michael Hewett	Jim Eddinger
David Marrack	Jeffrey Roop	Jim Stumbar	
Paul Tucker			

DISCUSSIONS AND DECISIONS

- EPA and EPA's contractor made a presentation on one possible way to subcategorize non-fossil boilers. The subcategorization was based on separating materials by solid, liquid, and gas, and then grouping similar types of materials together. The members of the subgroup generally agreed on including some solid, liquid, and gas subcategories, but did not agree with the materials that were grouped together.

- David Cooper, Jeff Roop, and Jim Stumbar revised the existing subcategories. The subgroup concurred with the revisions. The following are the new subcategories developed for non-fossil boilers:

  1. >70% Bagasse
  2. >70% Low Btu gas (including blast furnace gas)
  3. >70% High Btu gas (including coke oven gas, digester gas, landfill gas)
  4. >70% MSW and/or RDF
  5. >70% Waste oil (on spec oil)
  6. >70% Biomass
  7. >70% Tire derived fuel
  8. >70% Fossil fuel solids with non-fossil materials-stokers
  9. >70% Fossil fuel solids with non-fossil materials-pulverized
  10. >70% Fossil fuel solids with non-fossil materials-other
  11. Fossil fuel gas and other gas
  12. >70% fossil fuel liquid and other
  13. >70% Section 112 wood and other
  14. Mixed feed boilers that are Section 112 (no fuel above 70%)
  15. Mixed feed boilers that are Section 129 (no fuel above 70%)

- Members of the subgroup discussed the wood subgroup suggestion on moving co-fired boilers to other subgroups based on percent of material fired. However, members were uncomfortable with this suggestion and decided to keep all boilers burning non-fossil materials in the non-fossil subgroup. The members indicated that after further analyses was done, it may be decided to move some boilers firing small amounts of non-fossil fuel classified as Section 112 material to other subgroups.

- The subgroup discussed the testing recommendations presentation given by Jim Eddinger. Members noted that determining moisture and chlorine levels should be considered during phase I fuel analyses.

- One member suggested that EPA request existing fuel analysis information from members of the Work Group in order to save on costs.

- One member noted that the sugarcane industry was already conducting tests, and results will be made available to the Work Group. The member also noted that prior testing for mercury at boilers burning bagasse indicated very low levels were emitted.

ACTION ITEMS

- The subgroup requested that EPA revise the level of control analyses using the new subcategories. Members also requested that EPA show results assuming material cuts of >90%, >50%, and >30% as well as the >70%.

NEXT MEETING

- The next subgroup meeting will be on April 30 in Fort Collins, Colorado in conjunction with the Boiler WG meeting.

WOOD SUBGROUP MEETING
(March 24 and 25, 1998)

ATTENDEES

Rich Anderson (2nd day)	Andy Counts	Frank Ferraro	Greg Gesell
Brian Holmes	Rob Kaufmann	Kerry Kelly	Chad Leatherwood
Bob Palzer	Mike Soots	Dick Titus (2nd day)	Vladimir Zaytsef

DISCUSSIONS AND DECISIONS

- The subgroup recommended that testing be conducted on boilers that currently burn multiple fuels and that these tests be performed at "normal" boiler operation instead of developing a parametric test matrix based on unusual operating conditions.

- The subgroup decided that testing should include fuel analyses and is best performed at a pulp and paper facility since most of these plants fire multiple fuels.

- Rob Kaufmann volunteered to ask the American Forest and Paper Association members to allow testing at their plants after the subgroup identifies testing needs. He stipulated that members not be asked to operate their boilers under non-standard conditions.

- The subgroup recommended to the fossil and non-fossil subgroups the following cutoffs for co-fired wood boilers:
  - If a boiler is firing >50% wood and fuel from one other subgroup, the boiler is considered a wood-fired unit.
  - If a boiler is firing >34% wood and fuel from two other subgroups, the boiler is considered a wood-fired unit.

  This will keep most current wood boilers in the wood subgroup since only a small percentage of wood boilers fire <50% wood.

- Frank Ferraro provided an update of the Section 112/129 wood classification flow chart that Wendell Brough had presented in the full Work Group meeting.

- The subgroup reviewed model plants and decided to combine dutch ovens with stoker-fired boilers.

ACTION ITEMS

- The subgroup requested that EPA re-analyze the model plants with the 50% and 34% cuts to see how the "other" model plant category is affected. Dutch ovens should also be combined with stokers in this re-analysis.

- Frank Ferraro will update the HAPs of Interest list based on the revised New Hampshire model and E-mail it to the other wood subgroup members.

NEXT MEETING

- The subgroup will hold a conference call after the EPA's model plant re-analysis to determine how to classify the remaining "other" boilers. A date and time have not yet been set.

- The next subgroup meeting will be on April 30 in Fort Collins, Colorado, in conjunction with the Boiler WG meeting.

ATTACHMENT

Full Work Group Attendance List

Rich Anderson	Todd Barker
Michael Blumenthal	Andrew Bodnarik
Wendell Brough	Mark Bryson
Stanley Carter	David Cooper
Andy Counts	John deRuyter
Jon Devine	Gerald Doddington
Jim Eddinger	Frank Ferraro
Mike Fisher	Bill Freeman
Gordon Gaetke	Greg Gesell
Michael Hewett	Brian Holmes
Alex Johnson	Mark Kataoka
Robert Kaufmann	Kerry Kelly
Chad Leatherwood	David Marrack
Ruth Mead	Roy Oommen
Bob Palzer	Christy Presson
Steve Phelps	Jeffrey Roop
Gunseli Shareef	Mike Soots
James Stumbar	Virenda Trivedi
Paul Tucker	Edwin Weaver
Vladimir Zaytseff	

Attachment 5

Handout on HAPs from Combustion Sources

(Available only in hardcopy)

Attachment 6

Flow Diagram of Boiler Tasks

(Available only in hardcopy)

Attachment 7

Presentation on HAPs of Interest

(Available only in hardcopy)

Attachment 8

Data on Modeling Boiler HAPs of Interest

(Available only in Hardcopy)